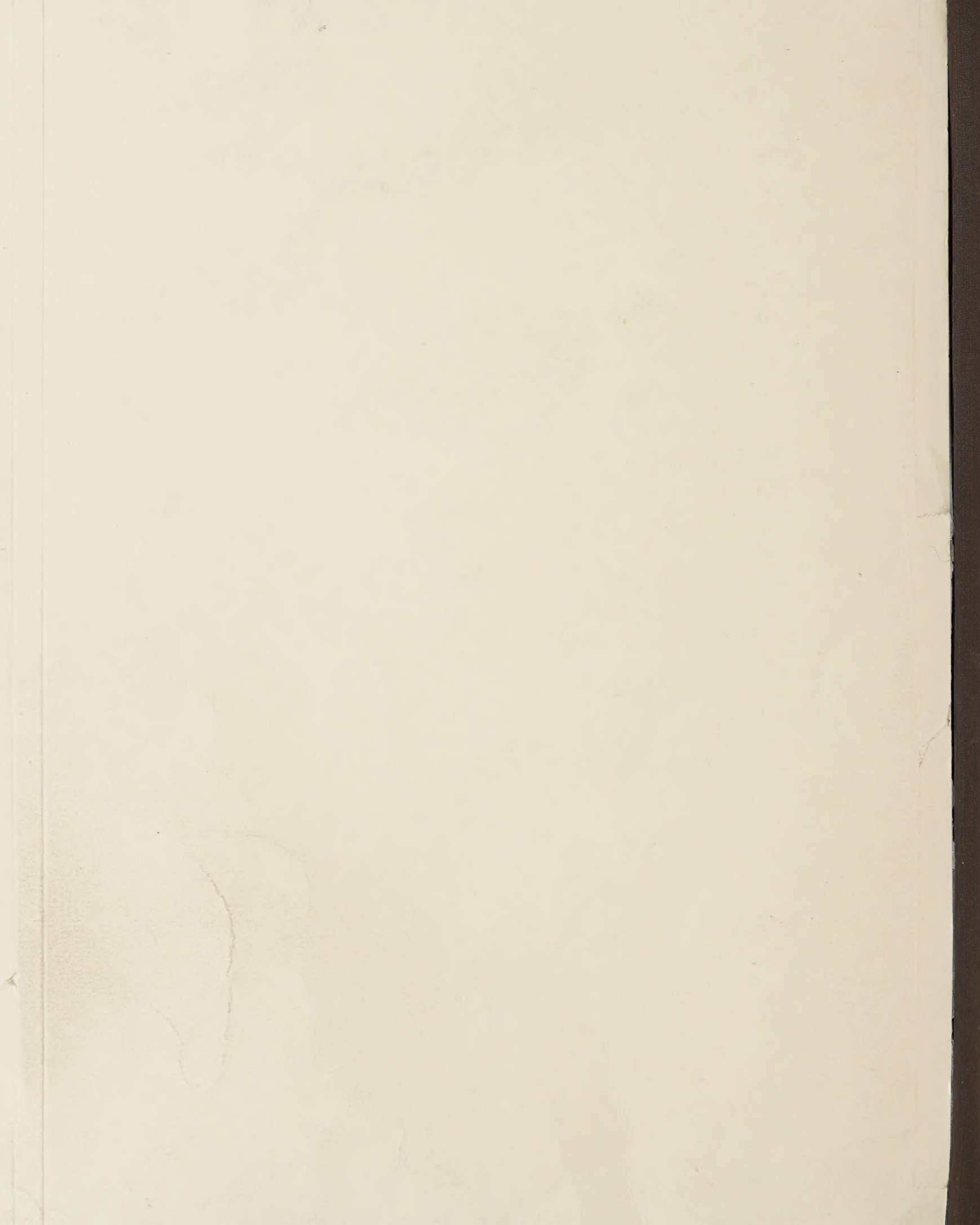


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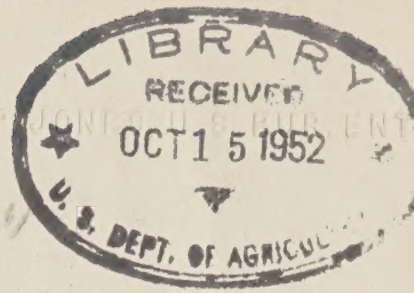
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UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE
Washington, D.C.



5a
(Not for publication)

5c
May 25, 1935

To Experiment Stations
and State Entomologists.

3
CODLING MOTH CONTROL PROGRAM FOR 1935.

Under date of March 28, 1934 this Bureau issued a memorandum outlining its general recommendations for codling moth control during 1934. For the most part the statements made at that time are applicable to the present season's program. The purpose of this memorandum is to summarize briefly the viewpoint of this Bureau for the present season. The great variation in climatic conditions and in the moth population in different regions as well as in different parts of the same region, precludes the making of recommendations that would apply uniformly to all apple-growing areas even in any one region. It is the policy of this Bureau, therefore, to furnish such information as is available for such general interest as it may contain, leaving to the State agencies the responsibility of recommendations to meet local conditions.

CONTROL MEASURES OTHER THAN SPRAYING

The results of last year's work by this Bureau and by a number of State Experiment Stations justify continuing the emphasis which has been placed on measures other than spraying. In several cases in which orchard clean-up and banding operations were placed on an experimental basis, important reductions in infestation were accomplished. Observations on the results obtained by growers with the screening of packing sheds has given further confirmation of previous statements regarding this practice. In the Northwest further work with the sterilization of containers indicates the operation is a good preventive measure. All of these practices, including thinning and disposal of wormy fruit, are an essential part of the control program wherever serious codling moth infestations exist. It is appreciated that the use of these control measures to supplement spraying add to the cost of production, and the extent to which they need to be utilized will be indicated by the intensity of the infestation.

SPRAY PROGRAM

Special emphasis should be placed upon the control of the codling moth during the first-brood period. With the rapid growth of the fruit during that time, coatings of poison are rapidly outgrown but if a good coverage is maintained, there is ample evidence that the worms of the first brood are more readily killed than the subsequent broods later in the season. The grower has everything to gain and nothing to lose by concentrating the major part of the spray program in this period, insuring a greater freedom from wormy fruit and less of a residue problem at harvest time.

Lead arsenate continues as the most practical effective material for codling moth control. The lead tolerance which has been announced for the crop season of 1935 (see announcement by Secretary Wallace under date of January 24, 1935) further indicates the necessity of keeping in mind the problem of residue removal in planning the spray program. Except in extremely limited areas which are fortunate in having a low codling moth population, the control programs must include washing the fruit to remove the residue. The number of applications which may be put on with assurance that the residues may be satisfactorily removed depends largely upon the adequacy of the removal machinery that is available. Although the use of oil sprays with lead arsenate has in most cases increased the effectiveness of the spray treatment, it has at the same time interfered to a greater or lesser extent with the removal process. The use of oil with lead arsenate later than the first brood applications is not generally recommended.

Calcium arsenate, although less effective than lead arsenate in controlling the codling moth, and more likely to injure foliage, is being used to some extent in regions having a low codling moth population, especially for certain applications later than the first cover spray. Arsenicals other than lead arsenate and calcium arsenate have not yet given sufficiently encouraging results to warrant their recommendation.

Cryolite has been found effective in controlling the codling moth under certain conditions existing in arid regions of the Pacific Northwest. However, the proportion of the fluorine residues which may be removed by present methods is much less than in the case of lead or arsenic, and the problem of removing residues of cryolite and other fluorine compounds has not as yet been worked out. In the absence of satisfactory information on the removal of fluorine residues, no specific recommendations can be made as to the use of these materials.

Summer oil emulsion in combination with nicotine sulphate has been used to a limited extent in certain sections. This is especially worth considering in the spraying of such early varieties as the Transparent, which require only a few applications for codling moth control and which bruise more readily than many other varieties in the washing process. The oil-nicotine combination may also prove useful in regions in which washing equipment is not as yet generally available and in which a short spray program gives satisfactory control of the codling moth. Unfortunately the use of oil and nicotine in part of the schedule following applications of lead arsenate interferes seriously with the removal of residues of lead and arsenic, even though the total quantity of residue involved is less than that deposited by a full season's schedule of lead arsenate. The oil is incompatible with sulphur fungicides, and should not be used too soon after the application of sulphur materials. The fixed nicotine compounds such as nicotine-bentonite and nicotine tannate are looked upon as a very promising group for further investigation but the results thus far do not justify a recommendation regarding them.

Derris, cubé, and pyrethrum were very thoroughly tested by this Bureau last season but failed to give appreciable control of worms.

Lee A. Strong,
Chief of Bureau.

